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AMSAT NEWS SERVICE
ANS-124

ANS is a free, weekly, news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

Please send any amateur satellite news or reports to:
ans-editor(a)amsat.org

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SB SAT @ AMSAT $ANS-124.01
Seven! Count 'Em Seven! CubeSats Delivered to Orbit

AMSAT News Service Bulletin 124.01
>From AMSAT HQ SILVER SPRING, MD.
May 4, 2008
To All RADIO AMATEURS
BID: $ANS-124.01

The April 28, 2008 launch of 10 satellites aboard the Indian Space Research Organization's (ISRO) Polar Satellite Launch Vehicle-9 (PSLV-9) rocket included 7 amateur radio cubesat, and 3 commercial/ scientific satellites. Watch for late breaking operational messages via the amsat-bb and detailed information on each of the satellite's respective web pages.

The payload included:

Cute-1.7	Tokyo Institute of Technology, Japan
SEEDS	Nihon University, Japan
Delfi-C3	Technical University of Delft, Netherlands
AAUSat-II	Aalborg University Cubesat, Denmark
COMPASS-1	Fachhochschule Aachen, Germany
CanX-2	University of Toronto, Canada
CanX-6	University of Toronto, Canada
Cartosat 2A	Indian Space Research Organization (non-amateur radio)
IMS 1	Indian Space Research Organization (non-amateur radio)
Rubin 8-AIS	OHB-System, Germany (non-amateur radio)

An excellent source of information for each of these satellites can be found at: http://space.skyrocket.de/index_frame.htm (scroll down to the April 28 data). Also see Ralph W0RPK Cubesat Webpage at: http://showcase.netins.net/web/wallio/CubeSat.htm.

Wouter, PE4WJ provided the following status of Delfi-C3:

+ Telemetry indicates that all solar panels and antennas have deployed

properly and indicates nominal values for all housekeeping values.

+ Payload data has started to stream in, enabling the team to generate IV curves of the Thin Film Solar Cell experiment. (RASCAL users can view the IV curves by clicking Options-->show IV curves.)

+ The spacecraft is operating in science mode, we have had one orbit in emergency mode, which was most probably due to a databus issue.

+ Amateur radio operators have sent over 40000 frames of data using RASCAL, the Delfi-C3 telemetry capture software.

+ The spacecraft has decided to consistently use the backup radio on 145.930 MHz for its telemetry downlink. The primary radio on 145.870 MHz may be switched on by the groundstation so monitor both frequencies.

+ We have successfully switched the spacecraft to its primary radio on 145.870MHz temporarily, after this switch, the satellite came back on the 145.930MHz downlink. Telemetry indicated that the primary radio on 145.870MHz is healthy and working fine so that is good news. Note that the satellite will normally transmit on 145.930MHz for the time being, unless we command her to go to 145.870MHz.

+ The team is working on the issue with the downlink TX switching off later into the sunlit side of the orbit, which is the reason why Delfi-C3 has not been heard on some passes. It may switch off when the computer does not receive data but the transmitter itself is OK.

Hiroki Ashida at the Tokyo Institute of Technology reported on the status of their Cute-1.7 + APD II satellite. The team is monitoring an anomaly where the telemetry received via FM packet shows very low battery voltage while the CW telemetry reports a nominal reading. If this low voltage condition exists the satellite may be in danger. Further testing in the lab has duplicated this anomaly and the team has confirmed that the batteries are in good shape at this time.

The Cute-1.7 team requests telemetry information from radio amateurs around the world. The satellite transmits its beacon at 437.275 MHz using CW Morse Code. The telemetry data in the beacon includes the battery voltage. Details are explained on their web-page: http://lss.mes.titech.ac.jp/ssp/cute1.7/cwtelemetry_e.html. The packet telemetry is only enabled when the satellite is over Japan.

Masahiko Yamazaki,JQ1YGV at Nihon University reported that the SEEDS satellite is currently overcharging so the team has enabled the FM mode to transmit the DigiTalker and SSTV pictures on 437.485 MHz. See: http://cubesat.aero.cst.nihon-u.ac.jp/index.html

The CanX team reported their spacecraft were doing well, "So far healthy telemetry from both. At some point CanX-2 was generating some 1.8 A and CanX-6 was at 1.4 A. Good temperature on both. CanX-2 propulsion system is holding pressure. We are continuing with commissioning. Both satellites are currently transmitting on the Space Research 2.2 GHz downlink. The UHF transmitter on CanX-2 would only be active over the ground station in Toronto, Canada.

Signal reports of the cubesats have been received from around the world. Here is a brief example captured from the amsat-bb ...

Just heard great signals of Delfic3 on 145.930. - Rob PE1ITR

Received good signals from DelfiC3 tonight in IO91TK 15km west of
London. Nice to hear another satellite on 2m. Just love that low path
loss! Well done Delft University of Technology. - David G0MRF

Very strong signal from Delfi telemetry transmitter. Good work and
congratulations to the Delfi team! - Jean-Pierre VE2AHD

Delfi-C3 received in Belgium during the third pass. 194 packets
received, decoded with RASCAL and sent to the command station.
Signals were loud and decodable during 90 % of the pass.
Congratulations to the team. Long life to Delfi-C3. - Claude ON5QI

Just had my one shot for the morning and got an excellent signal,
with AOS and LOS within seconds of predicted. The RASCAL program is
slick, and nicely accessed the servers to upload the data.
- Alan WA4SCA

Both the CUTE1.7 (437.275) and the SEEDS (437.485) CW signals were
monitored in Brno JN85HF. - Mirek OK2AQK

Using the latest kepler sets, automatic doppler correction, TS2000X,
2x8 elements beam with no pre-amp picked up the CUTE-1.7 signal
beautifully all the way from AOS to LOS ... less than one degree
elevation from a 100mW transmitter in space. Fantastic satellite!
- Henk, PA3GUO

I copied SEEDS this evening at 44 degrees el. in Honolulu. 73 to all
and congratulations to the Nihon University Cubesat Team!
- Robert NH7WN

I have updated my web site to include SEEDS SSTV.
See http://www.turlington.supanet.com - Robert G8ATE

Heard SEEDS digi-talker and SSTV on 2008-05-03. - Edward BX1AD

I have just copied Cute-1.7 over here in the UK (Wales - IO81EM)
using a Kenwood THD-7 and just its helical antenna. - Ken GW1FKY

The members of AMSAT-India and the Indian Ham fraternity congratulate
ISRO for the successful 10 pack satellite launch via the PSLV C9 his
morning. We would also congratulate the DELFI team, CUTE team and
the SEEDS team for their amateur radio satellites which are now placed
in orbit. VU2POP Secy AMSAT-India

[ANS thanks all of the Cubesat Teams for the above information]

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SB SAT @ AMSAT $ANS-124.02
AO-16 Down and Recovered

AMSAT News Service Bulletin 124.02
>From AMSAT HQ SILVER SPRING, MD.
May 4, 2008
To All RADIO AMATEURS
BID: $ANS-124.02

The AO-16 Command Team investigated reports this week that the
satellite had gone silent. The team is aware of the anomaly and
there is no cause for alarm. Control Operator, Mark, N8MH said,
"Over the last month AO-16 has gone from full illumination (0
minutes of eclipse) to over 250 minutes of eclipse. Since the
bird has no fancy housekeeping code running, a reasonable explan-

ation is that the battery voltage dropped low enough to put the bird into a protected (and silent) mode."

Mark was able to command AO-16 ON during a pass over the USA. The satellite resumed operating in its 1200 BPSK digital MBL telemetry mode on the 437.026 MHz transmitter. After further testing, Mark reported, "A quick look at the telemetry suggests that AO-16 is doing fine. The current transmitter output power is about 1.5 Watts. AO-16 is again configured for voice mode and is open for normal operation."

AO-16 has occasionally turned off on subsequent long eclipse periods. Mark explained, "At about 2043 utc on 2 May 2008 I commanded AO-16 back ON again. Apparently the increasing eclipse periods require another reduction in the transmitter output power. AO-16 is now back and operational in voice repeater mode, with a slightly reduced output. It is reporting around 1.2 watts output, so it was still quite loud."

The increasing eclipse periods are too long to sustain operations at the previous transmitter output setting. The sustainable power budget is being managed empirically by Mark, with "best guess" settings using the satellite's telemetry for feedback on its performance.

When AO-16 is silent the batteries continue to charge with minimal current being drawn to sustain the vital functions of the satellite (CPU). Thus, it is in a safe resting state at the moment, and the batteries continue to charge when in sunlight. Thanks to a brilliance in design, construction, and coding, the bird is hardy and excellent at self-preservation.

AO-16 Uplink: 145.920 MHz FM
AO-16 Downlink: 437.0260 MHz DSB (LSB and USB).

After recovery of AO-16 on May 3, the current plans are to leave the satellite in the digital MBL mode for a few days so as to collect telemetry for review. You can hear the satellite "humming" in its 1200 BPSK mode.

Interested listeners of AO-16 can help by copying any telemetry captured via the Warbler sound card demodulator. This software is from the same folks that brought you the RASCAL software for Delfi-C3. A file called "warbler.kss" is produced when packets are decoded. These "warbler.kss" files can be sent to N8MH for analysis. Please include your QTH (gridsquare) and the time the telemetry was captured.

Telemetry from AO-16 in the MBL mode is random and infrequent. It's possible to hear no telemetry during an entire pass. Please do not transmit to AO-16 until further notice.

Users of AO-16 are encouraged to report any aberrant operations by either posting to the AMSAT-BB or by emailing the command team at n8mh AT amsat.org "Aberrant operations" might include the following: complete loss of signal from the spacecraft or significant change in the transmitter frequency.

[ANS thanks Mark, N8MH for the above information]

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SB SAT @ AMSAT $ANS-124.03
AMSAT Awards

AMSAT News Service Bulletin 124.03

>From AMSAT HQ SILVER SPRING, MD.
May 4, 2008
To All RADIO AMATEURS
BID: $ANS-124.03

Bruce, KK5DO, AMSAT Director Contests and Awards wrote this week, "We would like to welcome the following to the satellite community. They have made their first satellite contact and are now members of the AMSAT Satellite Communicators Club:"

University of Florida, Gator Amateur Radio Club, W4DFU

The following have earned the AMSAT Sattelite Communications Achievement Award:
Clyde de Rossett, KI4CKT #462
University of Florida, Gator Amateur Radio Club, W4DFU #463

The following have earned the AMSAT South Africa Satellite Communications Achievement Award
Dimitrios Pallis, SW1JGW #US120
University of Florida, Gator Amateur Radio Club, W4DFU #US121

To see all the awards visit http://www.amsat.org.

[ANS thanks Bruce, KK5DO for the above information]

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SB SAT @ AMSAT $ANS-124.04
Satellite Shorts From All Over

AMSAT News Service Bulletin 124.04
>From AMSAT HQ SILVER SPRING, MD.
May 4, 2008
To All RADIO AMATEURS
BID: $ANS-124.04

+ Martha at AMSAT HQ reminds you that you MUST pay for your banquet ticket before May 12th. Giving her your name only will not hold a ticket. You need to call the AMSAT office at 301-589-6062.

+ Allen, N5AFV operated two passes of AO-51 and one pass of SO-50 from the Alamo in San Antonio, Texas on Tuesday and Wednesday (April 22 & 23). Allen says he has a special QSL card made up for the operation. QSL via home address.

+ EW/G0SFJ successfully contacted G7HIA on 20th April via AO-51, but under difficult conditions when operating from Minsk. Any SWL cards or reports gratefully received by email or QTHR, and will be acknowledged!

+ The AO-27 Satellite Scheduler program which has been available from http://www.cs.rit.edu/~cjh9783/programs/satsched.php is now also available from http://home.earthlink.net/~ka3hsw/ao27/ as well.

+ The W3HZU Beacons located on Grid FM19qv on 2.4GHZ and 1.2GHZ have been temporarily taken off the air in preparation to add a third beacon on 5.76GHZ. A message on the amsat-bb will advise when the beacons are back on the air. (via Charlie, K3VDB)

+ The Houston AMSAT Net Podcast has now been picked up by iTunes. You can do a search on iTunes for "Houston AMSAT Net", "KK5DO", or "Bruce Paige" and will be offered the opportunity to subscribe to

the Podcast.

+ Google Earth now offers tools to Visualize the Ionosphere in 4D. See:
http://science.nasa.gov/headlines/y2008/30apr_4dionosphere.htm?list958901
http://terra1.spacenvironment.net/%7eionops/es4dintro.html
You will be able to use Google Earth © applications such as:
- o Radio Availability
- o Total Electron Content
- o Maximum Useable Frequency
- o foF2
- o Past 24 hours TEC movie
- o Past 24 hours MUF movie

+ This past weekend, K3IO, W2GPS, WA4SXM attended the premier of AMSAT.ORG in Grand-Am Racing at the Virginia International Raceway. Jim Jaeger (K8RQ) arranged for the AMSAT logo to appear prominently on the yellow Doran Racing Kodak #77 Dallara/Ford car driven by Brad Jaeger (Jim's son) and Memo Gidley. The Doran Racing web site has a gallery of photos featuring their #77 Kodak & #47 BSi cars available for viewing at http://www.doranracing.com/08_vir/photo.htm. Look for the AMSAT.ORG logo on the yellow car!

+ Satellite DX opportunity ... Hans, VA7HAS plans to attempt operating via AO-51 from Pond Inlet, Baffin Island, FQ12AQ, between May 12-16. The radio will be an TH-F6A with a whip antenna.

[ANS thanks everyone for the above information]

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SB SAT @ AMSAT $ANS-124.05
NA1SS Contacts The National Air and Space Museum

AMSAT News Service Bulletin 124.05
>From AMSAT HQ SILVER SPRING, MD.
May 4, 2008
To All RADIO AMATEURS
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An International Space Station Expedition 17 ARISS school contact was held with participants at the National Air and Space Museum (NASM), Washington, DC, USA on 03 May.

NN1SS in Maryland performed earth station duties and provided the telebridge between NA1SS and the National Air and Space Museum. The contact was audible over most of the Eastern USA on the 145.80 MHz downlink.

This ARISS contact is part of the space day events celebrating NASA's 50th anniversary. This event is made possible by the generous support of Lockheed Martin.

The ARISS/AMSAT exhibit wass in the new "America by Air" gallery, Gallery 102 on the first floor, just past the Museum Store before you reach the Flight Simulators. The display featured ARISS and AMSAT hardware. Mr. Kemp and students from his Systems Engineering Class at Thomas Jefferson High School for Science and Technology explained their progress on their Cubesat project.

[ANS thanks Kenneth, N5VHO and Perry, W3PK for the above information]

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SB SAT @ AMSAT $ANS-124.06
ARISS Status Report For The Week of April 28, 2008

AMSAT News Service Bulletin 124.06
>From AMSAT HQ SILVER SPRING, MD.
May 4, 2008
To All RADIO AMATEURS
BID: $ANS-124.06

1. Upcoming School Contacts

An ARISS contact has been scheduled for Armada Area Schools in Armada, Michigan on Friday, May 9 at 13:38 UTC. Students will research space exploration, the effects of space on the human body, and technology used for space travel. Middle school students will write essays and high school students will create Power Point presentations. The Detroit News, Detroit Free Press, Armada Times and Macomb Daily newspapers will provide newspaper coverage. The local cable channel will tape and place the contact on the local channels and Channels 2, 4, 7 will also be contacted to provide local Metropolitan Detroit News coverage.

2. Arnold Palmer Hospital Contact Successful

On Monday, April 21, patients at the Arnold Palmer Hospital for Children in Orlando, Florida participated in an ARISS contact with Garrett Reisman, KE5HAE, via the telebridge station W6SRJ in California. Reisman answered the 20 questions which had been planned for him and continued answering another three posed by the seven children. Approximately 30 people were in attendance. Orlando television stations Central Florida News 13 and WESH Channel 2 both reported on the event.

3. ARISS - Russian School Contact

The Peter Klimuk School ARISS contact planned for Wednesday, April 23 was unsuccessful due to technical difficulties. The ARISS team is looking into the problem.

4. ESA Astronaut Visits ARISS Schools

ESA astronaut Paolo Nespoli, IZØJPA, gave two presentations to Italian schools which had participated in ARISS contacts in October 2007. On Wednesday, April 23, Nespoli spoke to 565 students from Galileo Galilei High School of Civitavecchia, Guglielmo Marconi High School of Civitavecchia and Giosuè Carducci Secondary School in Santa Marinella. On April 24, he spoke with 400 students from Aula Magna of the Faculty of Engineering of the University of L'Aquila. ARISS member Francesco De Paolis, IKØWGF, gave a talk on the ARISS program and Nespoli gave a presentation on the Esperia mission which also highlighted the ARISS contacts. Television stations and newspapers covered the events and photographs have been posted to the ARISS-Europe Web site. See: http://www.ariss-eu.org/2008_04_27.htm

5. Astronaut Training Status

An ARISS training session is planned for astronaut Bob Thirsk, VA3CSA, with Cedarview Middle School in Ottawa, Ontario, Canada. The training session, which is a terrestrial-based amateur radio contact using ARISS-equivalent equipment, is planned for Thursday, May 1 at approximately 19:30 UTC.

Expedition 19 back-up crew member Chris Hadfield, KC5RNJ/VA3OOG, will

attend an ARISS operations training session on Friday, May 2.

[ANS thanks Carol, KB3LKI for the above information]

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

73,
This week's ANS Editor,
JoAnne Maenpaa, K9JKM
K9JKM at amsat dot org